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16 October 1974

MEMORANDUM FOR: Mr. Thomas D. Willett  
Deputy Assistant Secretary  
for Research  
Department of the Treasury

SUBJECT : The Impact of Oil Price  
Hikes on Inflation

In response to your 7 October request, we are forwarding the attached report on the impact of oil price hikes on inflation. The calculations included in the report are based on input-output tables for the major industrial countries -- the United States, Japan, United Kingdom, France and West Germany. If there are any further information you require on this or related matters we would be happy to oblige.

Office of Economic Research

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## THE IMPACT OF OIL PRICE HIKES ON INFLATION

1. Higher oil costs have considerably aggravated inflationary pressures in major industrial countries. In all instances, the increase in domestic prices has accelerated sharply since OPEC raised crude prices last October and December. During the first half of 1974 wholesale prices in major industrial countries increased at an annual 37% rate while consumer prices jumped 18% on average -- the sharpest rise in post-war history.

2. Various estimates have been made of the impact on higher oil prices on the inflationary rate. The OECD Secretariat estimates that higher oil costs have added 2%-3% to overall price levels. Essentially that figure represents the increase in oil import costs as a share of OECD gross national product. This approach dilutes the impact of oil by including the government and private service sectors which account for about half of OECD GNP. Moreover, no allowance is made for the indirect impact.

3. For purposes of measuring the impact on goods in domestic and international trade, the effect on the wholesale price index is more valid comparison. To quantify the impact on wholesale prices involves use of input-output

tables. The technique essentially involves increasing the crude oil row in the inverted input-output tables by the percentage rise in oil prices. This, in turn, gives both the direct and indirect impact of the oil price rise on each sector of the economy. To evaluate the overall impact on the economy the resulting price changes for each sector -- steel, for example -- are then aggregated using wholesale price weights. The results correspond to the familiar wholesale price index.

#### The Overall Impact

4. Applying the technique to input-output tables for the major industrial countries yields the following results for the period October 1973 through June 1974.

	<u>Increase in Delivered Price of Crude Oil<sup>1</sup></u>	<u>Percent Increase in Wholesale Prices</u>
France	251	3.8
Japan	248	8.9
United Kingdom	173	5.6
United States	96	5.1
West Germany	170	7.7

<sup>1</sup>In terms of national currency. Data for France, Japan, the United Kingdom and the United States are to June 1974, and for West Germany to May.

5. The lion's share of the oil price increase has come since December when OPEC prices were roughly doubled.

That price hike was the chief factor stimulating wholesale price inflation during the first half of 1974. The input-output analysis indicates the following:

- Roughly half the wholesale price rise in Japan during the first half of 1974 was due to higher oil prices.
- About 40% of West Germany's price rise was due to higher oil prices.
- In the United States approximately half of the wholesale price rise reflected increased oil costs.
- In the United Kingdom about one-fourth of the rise was attributed to oil while in France the share was only about 20%.

The calculated impact in France is lower than in the other countries essentially because oil-related products have a smaller weight in the French wholesale price index. The results are similar to those of a recent French government study on the impact of higher oil prices. That study also indicates higher oil prices accounted for about one-third of the nearly 17% annual rate of increase in French consumer prices during the first half of 1974.

6. The latest OPEC price hike announced in October will further spur inflation. If the price rise is carried through, it will add nearly 5% to crude oil costs for the major countries. Input-output analysis indicates that such an increase would boost wholesale prices in the major countries

about 0.5%. On the surface, this figure appears small compared to recent and present rates of inflation. It represents, however, approximately one-half of Japan's long-term average annual rate of increase in the WPI and about one-fourth that of the US and most West European countries.

#### Impact on Industry

7. In all cases the direct and indirect impact on industrial production costs has been substantial. Industries hardest hit by the oil price hikes include chemicals, rubber, electric power, and textiles. In the case of Japan, for example, unit output costs in heavy chemicals increased 9% as a result of oil price hikes since October 1973. Gas and electric costs have been increased roughly 20%. Air and transport costs have also increased sharply -- rising 15%-20% in the case of France.

8. The impact varies from industry to industry depending on reliance on oil and oil-related inputs. In many instances, higher oil prices have directly and indirectly accounted for a major portion of the wholesale price increase for key manufactured products. Based on Japan's input-output tables, for example, roughly 30% of the rise in steel wholesale prices and approximately one-third of the rise in chemical prices since October 1973 result from higher oil costs. Data for

West Germany show that roughly 35% of the increase in machinery prices reflect higher oil costs.

9. The following table show the impact of higher oil costs on major industries in selected industrial countries.

## CHANGE IN UNIT OUTPUT PRICES

	UNITED KINGDOM	JAPAN	GERMANY
AGRICULTURE, FORESTRY	4.8	2.8	4.6
RAW MATERIALS	4.5	7.3	5.7
REFINED PETROLEUM	104.8	94.8	67.2
PROCESSED FOODS	3.0	3.1	4.3
TABACCO	2.2	1.4	1.0
IRON AND STEEL	5.3	4.9	6.1
NON-FERROUS METALS	3.0	5.2	3.9
FABRICATED METAL FABRICATIONS	2.9	3.3	3.3
CHEMICALS	7.4	8.5	4.8
RUBBER	3.3	4.5	3.4
FIBERS, YARN, FABRICS	2.6	4.1	2.4
CLOTHING, FURS	1.7	3.0	1.5
LEATHER GOODS	2.3	3.2	2.5
WOOD PRODUCTS	2.2	4.2	3.4
AGRICULTURAL & INDUSTRIAL MACHINERY	2.0	2.8	3.2
ELECTRICAL MACHINERY	2.0	2.9	2.6
TRANSPORT MACHINERY	2.6	2.6	4.7
PRECISION INSTRUMENTS	1.7	2.5	2.3
MISC. MANUFACTURES	3.6	4.9	1.9
CONSTRUCTION	2.1	3.8	2.5
UTILITIES	13.9	17.2	6.0
TRANSPORT	3.4	6.2	10.0

Some Unmeasured Effects

10. The input-output analysis neglects some indirect effects of higher oil prices on rates of inflation. For example, by contributing to overall inflation rates, higher oil prices have added impetus to wage demands in major industrial countries. A prime example is the case of Japan where perhaps one-fourth of the rise in wage rates this year may be attributed to the added inflation caused by higher oil costs. Based on past relationships between price changes and wage increases, this year's wage hike would have averaged around 25% in the absence of the oil price rise. Actually, hourly wages have increased 32% on average.

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